

App. No. 10/792,003
Reply to final Office Action

REMARKS/ARGUMENTS

RECEIVED
CENTRAL FAX CENTER

DEC 13 2006

A. Summary of the Amendment

Reexamination and reconsideration are courteously requested. By way of the present amendment, claims 18 to 29 are canceled, in addition to those canceled by way of previous amendments. Thus, claims 1 to 6, 10, 12 to 13, 16, 30 to 31, 34 to 41, and 43 are pending for the Examiner's consideration, with claims 1, 10, 16, 30, 31, and 41 being independent claims.

B. Rejections Under 35 U.S.C. § 102(b)

Independent claim 31 is rejected as being anticipated by U.S. Patent No. 6,444,259 (Subramanian). This rejection is respectfully traversed. The claim is directed to a method for depositing a modified MCrAlY coating onto a superalloy substrate in multiple layers, wherein a first layer of Pt-including modified MCrAlY is deposited onto the superalloy substrate, and a second layer of modified MCrAlY on top of the first layer, wherein the second layer does not include Pt. In contrast, Subramanian discloses (col. 5, lines 5 to 20) a first bond layer that includes MCrAlYX modified with Pt (60), and an unmodified MCrAlY (62). In other words, the second layer (62) disclosed by Subramanian is not a modified MCrAlY (also conventionally defined as MCrAlYX, and further defined in the same manner in paragraphs 0051 and 0052 of the specification) as recited in claim 31. Because Subramanian fails to teach or suggest "a second layer of modified MCrAlY" as recited in claim 31, the rejection under 35 U.S.C. § 102(b) should be withdrawn.

App. No. 10/792,003
Reply to final Office Action

C. Rejections Under 35 U.S.C. § 103(a)

Claims 1 to 6, 34 to 36, 38 to 40, and 43 are rejected as being unpatentable over U.S. Patent No. 6,475,642 (Zhao) in view of Submaranian. The rejections are respectfully traversed.

Independent claims 1 and 34 are directed to an MCrAlYX coating, and to a turbine blade having such a coating. The coating includes a first coating layer formed on the substrate and having a composition represented by the formula MCrAlYX, wherein M comprises at least one member of the group consisting of Ni, Co, and Fe, and X comprises Pt and at least one member of the group consisting of Hf, Si, Zr, Ta, Re, and Ru, the weight percentage of X to the total composition being within the range of about 0.1% to about 28.0. The coating further includes at least one additional coating layer on either side of the first coating layer, wherein the at least one additional coating layer includes a MCrAlY (modified MCrAlY) that does not include Pt. Please refer, for example, to paragraph 0051 of the present application for a description of this embodiment. In contrast, Zhao discloses coatings for turbine blades that may include MCrAlYX, but does not include any type of multiple layered MCrAlYX coating as recited in the independent claims. Consequently, Zhao fails to disclose a multiple layered modified MCrAlY coating (MCrAlYX) wherein one MCrAlYX layer includes Pt and another MCrAlYX layer does not include Pt.

Submaranian fails to compensate for the deficient teachings of Zhao. While Subramanian discloses (col. 5, lines 5 to 20) a first bond layer that includes MCrAlYX modified with Pt (60), and a second bond layer of MCrAlY (62), the second bond layer (62) is not a modified MCrAlY as recited in claims 1 and 34. Because neither Zhao nor Subramanian teaches or suggests "a second layer of modified MCrAlY" as recited in claim 31, the rejections based on Zhao and Subramanian should be withdrawn.

Independent claim 41 is rejected as being unpatentable over Zhao in view of Subramanian and U.S. Patent No. 6,264,039 (Chyi). This rejection is respectfully traversed.

Claim 41 is directed to a powder composition represented by the formula MCrAlYX, wherein M comprises at least one member of the group consisting of Ni, Co, and Fe, X comprises a combination of at least Pt, Re, Ru, Hf and Si, and the weight percentage of X to the

App. No. 10/792,003
Reply to final Office Action

total composition is within the range of about 0.1% to about 28.0%. In contrast, Zhao discloses various alloys, some of which are modified MCrAlY materials. However, the only materials disclosed by Zhao that include rhenium are listed in the Table in column 9, and none of those rhenium-including alloys are MCrAlY alloys.

The Examiner asserts that Zhao discloses (col. 4, lines 10-12, 23-24) that "precious metals" are included in the alloys, and cites Chyi for teaching that rhenium may be considered a precious metal that is useful for high temperature oxidation resistance applications. However, it is respectfully pointed out that even in view of this teaching, claim 41 is not directed to an alloy, *but to a powder composition*. Even if Zhao in view of Chyi suggests a modified MCrAlY alloy that includes rhenium, nowhere in Zhao is there a teaching or suggestion of a powder composition that includes the elements recited in claim 41 in a single powder composition. Zhao discloses numerous methods for forming the alloy including induction melting, spraying, and deposition processes. However, it is well known that in such processes the elements are often added incrementally, or are at least partially pre-alloyed and melted or powderized with some or all of the elemental components prior to forming a layer of the alloy. Nowhere in Zhao (or Chyi) is there a teaching or suggestion of all of the elements recited in claim 41 in elemental form and in a powder composition. For at least this reason, the rejection of claim 41 should be withdrawn.

Claims 18 to 29 are rejected as being unpatentable over U.S. Patent No. 5,554,837 (Goodwater) in view of Zhao. These rejections are moot since the subject claims are canceled by way of the present amendment.

In view of Applicant's amendments and remarks, it is respectfully submitted that Examiner's objections and rejections have been overcome. Accordingly, Applicants respectfully submit that the application is now in condition for allowance, and such allowance is therefore earnestly requested. Should the Examiner have any questions or wish to further discuss this application, Applicants request that the Examiner contact the Applicants attorneys at the below-listed telephone number. If for some reason Applicants have not requested a sufficient extension and/or have not paid a sufficient fee for this response and/or for the extension necessary to prevent abandonment on this application, please consider this as a request for an


App. No. 10/792,003
Reply to final Office Action

extension for the required time period and/or authorization to charge Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,

INGRASSIA FISHER & LORENZ

Dated: DEC 13 2006

By: 
David K. Benson
Reg. No. 42,314
(480) 385-5060